Trend Study 21A-10-02

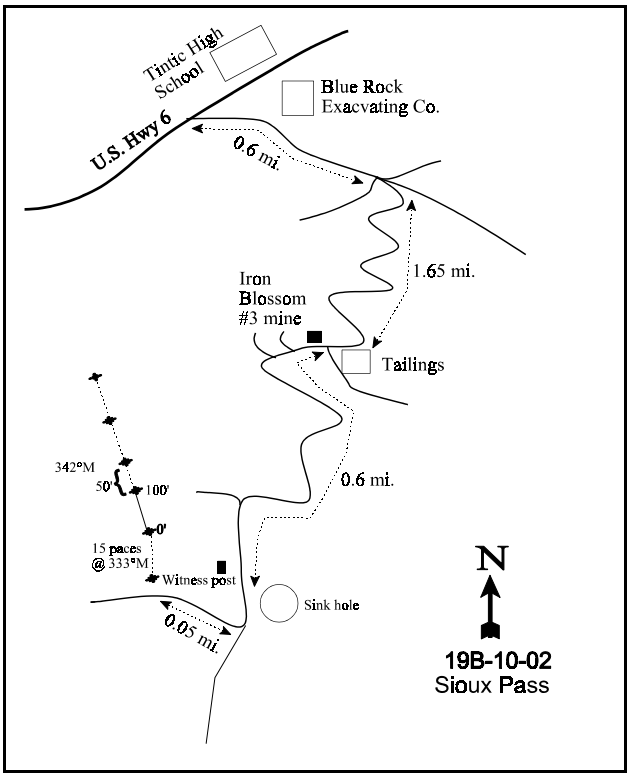
Study site name: Sioux Pass . Vegetation type: Mountain Brush .

Compass bearing: frequency baseline 347 degrees magnetic (lines 2-4 @ 330°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 1 on 1ft and belt 2 on 1ft.

LOCATION DESCRIPTION

From Highway U.S. 6 on the east side of Eureka, turn south on a gravel road just west of Tintic High School. Travel south on this road for 2.25 miles, always staying on the main road. At this point, turn right (west) on the road at the Iron Blossom number 3 mine. Travel on this road for 0.60 miles just past a large sinkhole to the left. At this point, a small jeep trail turns off sharply to the right. Drive or walk up this trail for 0.05 miles, at which point there is a steel fencepost stake on the right side of the road. Prom this point, the 0-foot mark of the baseline is located 15 paces away due north.



Map Name: Eureka

Diagrammatic Sketch

Township 10S , Range 2W , Section 29

GPS: NAD 27, UTM 12S 4419932 N 406106 E

DISCUSSION

Sioux Pass - Trend Study No. 19B-10

The Sioux Pass study is located at an elevation of 7,400 feet on a moderately steep (35%), east to northeast facing slope. The study samples deer summer range located on private property. This mountain brush community supports a variety of browse with a very limited herbaceous understory. Nearby ridges and draws, occupied by pinyon-juniper and curlleaf mountain mahogany, provide important escape and resting cover. In 1983, more than a dozen deer were observed in the immediate study area. No cattle were seen in 1983, but evidence of previous use was apparent. The site showed moderate deer use in 1997 and 2002, with evidence of lighter use by elk and domestic sheep also present. A pellet group transect read on site in 2002 estimated 78 deer days use/acre (193 ddu/ha) and 19 sheep days use/acre (46 sdu/ha). Sheep use appeared heavier than what was estimated by the pellet group transect in 2002.

The soil is rocky on the surface and throughout the profile. Chemical and textural analysis indicates soils to be a sandy loam and neutral in reactivity (pH of 6.7). Effective rooting depth was estimated at 15 inches with an average soil temperature of 43°F measured at 17 inches in depth in 1997. Although herbaceous vegetation is low on the site, the browse component is abundant and combines with litter to minimize erosion. The erosion condition class was determined as stable in 2002.

Browse composition includes a wide variety of shrub species. The key browse species are mountain big sagebrush and antelope bitterbrush as they provide about 75% of the total browse cover on the site. The mountain big sagebrush population occurs in a stable and moderately dense stand of about 3,000 plants/acre since 1989. Young plants were abundant in 1983 and 1989, but were much lower in 1997 and 2002. The majority of the population consists of mature plants with a stabilized percent decadence of about 20% in 1997 and 2002. The proportion of the population showing poor vigor peaked at 47% during the drought in 1989, but has been much lower at 10% since then. Utilization has been mostly light in all readings. Annual sagebrush leader growth averaged 1.8 inches in 2002. The population of bitterbrush is estimated at 1,120 plants/acre in 2002. Age class structure consists of mostly mature plants, with moderate decadency, and low recruitment of young in 2002. Due to consistent heavy use on bitterbrush, most plants are prostrate in growth form averaging less than one foot in height. Annual leaders were minimal on bitterbrush in 2002, with growth averaging 1.9 inches. Flowering and seed production were also minimal in 2002. Vigor has been mostly normal since 1989, a big improvement from the initial reading when 61% of the bitterbrush plants displayed poor vigor.

Other preferred shrubs include Saskatoon serviceberry and Martin ceanothus. Serviceberry provides very little cover with an estimated density of about 100 plants/acre. Use was heavy and percent decadency high at 50% in 2002. Martin ceanothus density was estimated at just under 200 plants/acre in 1997 and 2002. Use was mostly light, while decadence and poor vigor were moderate. Most of the population is made up of mature plants. Increaser shrubs include primarily stickyleaf low rabbitbrush, white-stemmed rubber rabbitbrush, broom snakeweed, and pricklypear cactus.

Grass composition and diversity are low. Bluebunch wheatgrass is the dominant perennial which provided nearly 80% of the grass cover in 2002. Bluebunch wheatgrass increased in nested frequency in 2002, although the increase was not significant. It was noted as being healthy and vigorous even with drought in 2002, yet seedheads were limited. Cheatgrass brome is also present on the site. It is the second most abundant grass. However, the nested frequency of cheatgrass declined by over half in 2002 with the drought conditions. Indian ricegrass, mutton bluegrass, crested wheatgrass, and Sandberg bluegrass have also been sampled, but all occur in very low numbers and only Indian ricegrass has been sampled in all readings.

Forb composition, although more diverse than grasses, also has poor productivity. Although no single species is abundant, forbs such as low penstemon, redroot eriogonum, and lupine collectively help provide some of the succulent forage important to deer on this summer range. Sum of nested frequency for perennial forbs slightly declined in 2002 with drought as most forbs were dried up when the site was read in August.

1983 APPARENT TREND ASSESSMENT

The soil trend appears stable. Erosion will continue unless the herbaceous understory increases in abundance. Browse trend appears stable, especially for the big sagebrush population. Species such as antelope bitterbrush and Martin ceanothus are more precarious. These are the most preferred plants on the area, and not surprisingly, their vigor appears depressed. Increaser shrubs are not currently a significant problem. Herbaceous understory cover, density, and composition are fair but still well below optimum for good quality summer habitat.

1989 TREND ASSESSMENT

The large amount of bare ground allows continued soil movement, but it has changed very little since 1983. The soil trend is stable. The preferred browse species, antelope bitterbrush, has a slightly downward trend due to the continuous heavy browsing by deer and sheep. Vigor has improved but percent decadency has increased. Mountain big sagebrush trend is slightly downward as well with an increase in plants displaying poor vigor. Overall browse trend is slightly downward. The herbaceous understory is depleted. Although bluebunch wheatgrass nested frequency has significantly increased since 1983, the overall herbaceous understory trend is only stable.

TREND ASSESSMENT
soil - stable (3)
browse - slightly down (2)
herbaceous understory - stable (3)

1997 TREND ASSESSMENT

The soil trend is stable. While percent bare ground cover has decreased, rock and pavement cover have increased. The browse trend is stable. Antelope bitterbrush stills exhibits heavy utilization, but not as much as in the past. Percent decadency has declined from 29% in 1989 to 8% in 1997. Mountain big sagebrush vigor has improved since 1989 and decadence is moderately low at 19%. The main negative factor with sagebrush is that 50% of the decadent plants were classified as dying. This would indicate possible continuing losses to the population. Currently, the dead to live ratio is 1:3, or 25% of the population are dead. Increaser plants do not appear to be increasing at this time. The perennial herbaceous understory sum of nested frequency is nearly identical to that of 1989. The herbaceous understory is still depleted, but appears to have a stable trend.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

2002 TREND ASSESSMENT

Soils have a slightly downward trend. Cover of bare ground increased, and litter cover slightly decreased. Most of the vegetation cover on the site comes from shrubs which are not as effective as herbaceous species at holding soils in place. Trend for browse is stable. The key species, bitterbrush and mountain big sagebrush, have stable densities, decadence remains within acceptable limits, and vigor is generally normal throughout their respective populations. Mountain big sagebrush has moderately low reproduction with 280 young plants/acre being sampled, while no young bitterbrush were sampled in 2002. Low shrub reproduction often results during periods of drought and should improve with better precipitation. Trend for the herbaceous component is stable. The herbaceous understory has been rather sparse in all readings which has not changed in 2002. Drought, Mormon crickets, and a diverse and abundant mountain brush community combined to suppress the understory in 2002. Due to the fact that the understory has been limited since site establishment in 1983, it is unlikely that the understory will ever increase in productivity on it's own without changes in management, perhaps even restoration efforts.

TREND ASSESSMENT
soil - slightly down (2)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 19B, Study no: 10

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron cristatum	-	-	-	1	-	-	-	1	-	.00
G	Agropyron spicatum	$_{a}$83	$_{ab}$101	$_{bc}$123	$_{c}$146	32	40	49	54	3.69	5.84
G	Bromus tectorum (a)	-	-	$_{b}$224	$_{a}$101	-	-	78	39	2.20	1.21
G	Oryzopsis hymenoides	$_{ab}$19	$_{b}$20	$_{ab}$15	$_{a}$6	10	11	8	3	.30	.37
G	Poa fendleriana	3	-	-	-	1	-	-	-	-	-
G	Poa secunda	1	2	2	-	1	1	2	-	.03	-
Total for Annual Grasses		0	0	224	101	0	0	78	39	2.20	1.21
Total for Perennial Grasses		106	123	140	153	44	52	59	58	4.02	6.22
Total for Grasses		106	123	364	254	44	52	137	97	6.23	7.44
F	Alyssum alyssoides (a)	-	-	$_{a}$5	$_{b}$13	-	-	2	4	.01	.02
F	Arabis spp.	-	-	1	-	-	-	1	-	.03	-
F	Astragalus spp.	-	-	-	1	-	-	-	1	-	.00
F	Calochortus nuttallii	4	-	-	-	2	-	-	-	-	-
F	Chenopodium fremontii (a)	-	-	$_{b}$9	$_{a}$-	-	-	6	-	.11	-
F	Chenopodium leptophyllum (a)	-	-	4	-	-	-	1	-	.00	-
F	Cirsium spp.	$_{b}$10	$_{ab}$3	$_{a}$-	$_{a}$-	5	1	-	-	-	-
F	Collomia linearis (a)	-	-	1	1	-	-	1	1	.00	.00
F	Corallorrhiza maculata	-	1	-	-	-	1	-	-	-	-
F	Collinsia parviflora (a)	-	-	-	1	-	-	-	1	-	.03
F	Crepis acuminata	-	2	1	3	-	2	1	1	.03	.00
F	Cryptantha spp.	-	-	1	-	-	-	1	-	.00	-

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
F	Cynoglossum officinale	-	2	2	-	-	1	2	-	.03	-
F	Epilobium brachycarpum (a)	-	-	3	-	-	-	2	-	.01	-
F	Eriogonum brevicaule	-	-	-	3	-	-	-	1	-	.00
F	Eriogonum racemosum	$_{a}$9	$_{b}$25	$_{a}$4	$_{a}$8	4	12	3	4	.01	.02
F	Eriogonum umbellatum	$_{ab}$6	$_{b}$16	$_{ab}$10	$_{a}$-	2	6	4	-	.09	-
F	Hackelia patens	7	10	5	-	4	4	2	-	.04	-
F	Lappula occidentalis (a)	-	-	5	-	-	-	2	-	.01	-
F	Lactuca serriola	-	6	-	-	-	2	-	-	-	-
F	Lomatium spp.	3	1	-	-	1	1	-	-	-	-
F	Lupinus argenteus	6	17	4	16	2	8	2	8	.15	.21
F	Machaeranthera canescens	$_{b}$27	$_{a}$2	$_{a}$2	$_{a}$3	14	1	2	1	.06	.03
F	Mentzelia albicaulis (a)	-	-	$_{b}$18	$_{a}$-	-	-	9	-	.11	-
F	Oenothera pallida	3	-	-	-	1	-	-	-	-	-
F	Penstemon humilis	$_{b}$46	$_{a}$-	$_{b}$48	$_{b}$30	19	-	19	15	.54	.58
F	Phlox longifolia	$_{a}$6	$_{b}$50	$_{a}$25	$_{a}$8	3	25	12	5	.11	.02
F	Polygonum douglasii (a)	-	-	9	1	-	-	5	1	.02	.00
F	Sisymbrium altissimum (a)	-	-	4	-	-	-	2	-	.01	-
F	Streptanthus cordatus	2	-	-	1	2	-	-	1	-	.00
F	Tragopogon dubius	-	-	2	-	-	-	1	-	.00	-
Total for Annual Forbs		0	0	58	16	0	0	30	7	0.30	0.05
Total for Perennial Forbs		129	135	105	73	59	64	50	37	1.12	0.89
Total for Forbs		129	135	163	89	59	64	80	44	1.42	0.95

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 19B, Study no: 10

Type	Species	Strip Frequency		Average Cover %	
		'97	'02	'97	'02
B	Acer grandidentatum	3	2	1.26	1.00
B	Amelanchier utahensis	6	4	.15	.53
B	Artemisia tridentata vaseyana	76	84	15.04	16.47
B	Cercocarpus ledifolius	3	0	.15	-
B	Ceanothus martinii	4	7	.74	.18
B	Chrysothamnus nauseosus albicaulis	2	3	.15	.18
B	Chrysothamnus viscidiflorus viscidiflorus	56	62	1.73	2.05
B	Eriogonum microthecum	27	30	1.05	1.63
B	Gutierrezia sarothrae	0	3	-	-
B	Opuntia spp.	22	28	1.42	.64
B	Pinus monophylla	0	3	.63	.03
B	Purshia tridentata	44	36	6.42	5.48
B	Symphoricarpos oreophilus	3	1	.03	.15
Total for Browse		246	263	28.80	28.38

CANOPY COVER -- LINE INTERCEPT
Herd unit 19B, Study no: 10

Species	Percent Cover	
	'97	'02
Acer grandidentatum	-	2.00
Amelanchier utahensis	-	.42
Artemisia tridentata vaseyana	-	17.00
Ceanothus martinii	-	.33
Chrysothamnus nauseosus albicaulis	-	.42
Chrysothamnus viscidiflorus viscidiflorus	-	2.75
Eriogonum microthecum	-	.75
Opuntia spp.	-	.25
Pinus monophylla	.40	.17
Purshia tridentata	-	6.17
Symphoricarpos oreophilus	-	.05

Key Browse Annual Leader Growth
Herd unit 19B , Study no: 10

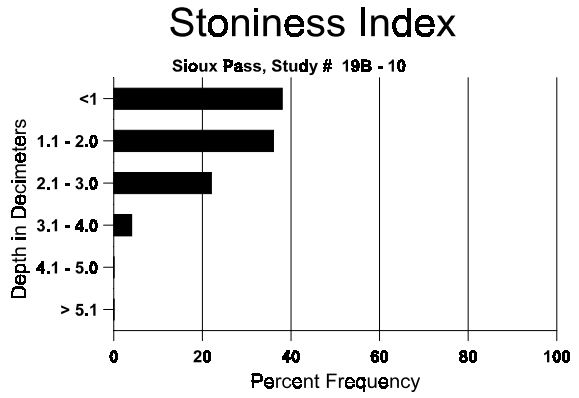
Species	Average leader growth (in) '02
Artemisia tridentata vaseyana	1.8
Purshia tridentata	1.9

BASIC COVER --
Herd unit 19B, Study no: 10

Cover Type	Nested Frequency		Average Cover %			
	'97	'02	'83	'89	'97	'02
Vegetation	308	272	4.25	12.50	35.70	35.09
Rock	268	261	14.50	14.25	15.34	18.14
Pavement	263	262	2.25	1.25	9.17	8.52
Litter	388	380	48.00	37.75	40.42	37.02
Cryptogams	8	-	0	0	.16	0
Bare Ground	223	262	31.00	34.25	11.55	24.42

SOIL ANALYSIS DATA --
Herd Unit 19B, Study no: 10, Sioux Pass

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
15.4	43.2 (16.5)	6.7	72.7	15.4	11.8	1.9	14.2	169.6	0.6



PELLET GROUP FREQUENCY --
Herd unit 19B, Study no: 10

Type	Quadrat Frequency		Pellet Transect			
			Pellet Groups per Acre		Days Use per Acre (ha)	
	'97	'02	'97	'02	'97	'02
Sheep	4	1	165	244	13 (31)	19 (46)
Rabbit	4	2	-	-	-	-
Elk	4	1	17	-	1 (4)	-
Deer	29	15	418	1018	32 (79)	78 (193)
Cattle	-	-	17	-	1 (4)	-

BROWSE CHARACTERISTICS --
Herd unit 19B, Study no: 10

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Acer grandidentatum																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	10	-	-	-	-	-	2	-	-	12	-	-	-	240			12
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	67	36	0
	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100	-	-	5
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	-58%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	0	-
	'89	0	-
	'97	240	-
	'02	100	-

Amelanchier utahensis																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	1	-	-	-	-	-	1	-	-	-	33			1
	97	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	1	1	-	-	1	-	-	-	3	-	-	-	60	30	29	3
	02	-	-	-	-	-	2	-	-	-	2	-	-	-	40	20	33	2
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	1	-	-	-	-	-	-	-	1	20			1
	02	-	-	-	-	1	1	-	-	-	2	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	+73%
'97	33%	33%	17%	-33%
'02	25%	75%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	0	0%
	'89	33	0%
	'97	120	17%
	'02	80	50%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	5	-	-	1	-	-	-	-	-	6	-	-	-	200			6
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	19	-	-	-	-	-	-	-	-	18	-	1	-	633			19
	89	33	-	-	1	-	-	-	-	-	22	-	12	-	1133			34
	97	1	-	-	-	1	-	-	-	-	2	-	-	-	40			2
	02	14	-	-	-	-	-	-	-	-	14	-	-	-	280			14
M	83	30	8	-	-	-	-	-	-	-	38	-	-	-	1266	20	22	38
	89	38	9	1	-	-	-	-	-	-	24	1	23	-	1600	26	33	48
	97	81	26	6	-	1	-	-	-	-	114	-	-	-	2280	21	37	114
	02	102	5	1	2	-	-	-	-	-	110	-	-	-	2200	22	36	110
D	83	9	6	-	-	-	-	-	-	-	6	-	9	-	500			15
	89	9	2	-	-	-	-	-	-	-	2	-	6	3	366			11
	97	21	6	-	1	-	-	-	-	-	14	-	-	14	560			28
	02	30	-	-	1	-	-	2	-	-	18	-	-	15	660			33
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	920			46
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	620			31

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	19%	00%	14%	+23%
'89	12%	01%	47%	- 7%
'97	24%	04%	10%	+ 8%
'02	03%	.63%	10%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	2399	Dec:	21%
'89	3099		12%
'97	2880		19%
'02	3140		21%

Cercocarpus ledifolius																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	2	1	-	-	-	-	-	-	-	3	-	-	-	60	-	-	3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	104	117	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	33%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	0	Dec:	-
'89	0		-
'97	60		-
'02	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ceanothus martinii																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	28	-	-	-	-	-	-	-	-	28	-	-	-	933			28
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	2	26	-	-	-	-	-	-	18	-	10	-	933	16	20	28
	89	5	-	-	-	-	-	-	-	-	5	-	-	-	166	12	30	5
	97	3	-	-	-	-	-	-	-	-	-	-	-	3	60	13	39	3
	02	4	1	1	1	-	-	-	-	-	7	-	-	-	140	10	19	7
D	83	-	-	3	-	-	-	-	-	-	-	-	3	-	100			3
	89	74	-	-	-	-	-	-	-	-	73	-	1	-	2466			74
	97	-	-	-	2	-	-	-	-	-	2	-	-	-	40			2
	02	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	06%	94%	42%	+71%
'89	00%	00%	.93%	-96%
'97	00%	00%	38%	+11%
'02	11%	11%	22%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	1033	10%
	'89	3565	69%
	'97	160	25%
	'02	180	22%

Chrysothamnus nauseosus albicaulis																		
Y	83	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	3	-	-	-	-	-	-	-	-	3	-	-	-	100	11	14	3
	89	1	1	-	-	-	-	-	-	-	1	1	-	-	66	16	18	2
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20	8	28	1
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40	28	30	2
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-60%
'89	50%	00%	00%	-39%
'97	00%	00%	00%	+33%
'02	00%	00%	33%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	166	0%
	'89	66	0%
	'97	40	50%
	'02	60	33%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	2	-	-	2	-	-	5	-	-	-	166			5
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	11	-	-	-	-	-	-	-	-	11	-	-	-	366			11
	89	10	-	-	-	-	-	-	-	-	10	-	-	-	333			10
	97	2	-	-	1	-	-	-	-	-	3	-	-	-	60			3
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	83	90	-	-	-	-	-	-	-	-	90	-	-	-	3000	10	14	90
	89	85	2	1	10	-	-	2	-	-	100	-	-	-	3333	14	17	100
	97	83	1	-	14	-	-	1	-	-	99	-	-	-	1980	12	13	99
	02	70	-	9	3	-	-	2	-	-	66	-	18	-	1680	10	15	84
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	13	1	-	-	-	-	-	-	-	12	-	2	-	466			14
	97	3	-	-	2	-	-	-	-	-	4	-	-	1	100			5
	02	12	2	6	-	1	-	-	-	-	8	-	7	6	420			21
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+19%
'89	02%	.80%	02%	-48%
'97	.93%	00%	.93%	+ 0%
'02	03%	14%	29%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'83	3366	0%
	'89	4132	11%
	'97	2140	5%
	'02	2140	20%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Eriogonum microthecum																		
Y	83	2	-	-	-	-	-	-	-	-	1	1	-	-	66			2
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	18	11	-	-	-	-	-	-	-	9	20	-	-	966	8	13	29
	89	36	1	1	10	-	-	3	-	-	51	-	-	-	1700	11	16	51
	97	29	-	-	8	-	-	-	-	-	37	-	-	-	740	12	20	37
	02	37	1	-	2	-	-	-	-	-	40	-	-	-	800	9	17	40
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	4	-	-	1	-	-	-	-	-	5	-	-	-	166			5
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	35%	00%	00%	
'89	02%	02%	00%	+46%
'97	00%	00%	00%	-60%
'02	02%	00%	00%	+10%

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	1032	Dec:	0%
	'89	1899		9%
	'97	760		0%
	'02	840		2%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	42	-	-	-	-	-	-	-	-	42	-	-	-	1400	7	7	42
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	3	-	-	-	-	-	-	-	-	2	-	-	1	60	8	14	3
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	33%

Total Plants/Acre (excluding Dead & Seedlings)			%Change
'83	0	Dec:	0%
'89	1533		2%
'97	0		0%
'02	60		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	1	-	-	1	-	-	2	-	-	-	66			2
	97	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
	02	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	83	11	-	-	-	-	-	-	-	-	11	-	-	-	366	6	18	11
	89	6	-	-	2	-	-	-	-	-	7	-	1	-	266	8	32	8
	97	24	-	-	4	-	-	-	-	-	28	-	-	-	560	5	26	28
	02	31	-	-	-	-	-	-	-	-	31	-	-	-	620	5	16	31
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	4	-	-	1	-	-	-	-	-	3	-	-	2	100			5
	02	9	-	-	-	-	-	-	-	-	-	-	-	9	180			9
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	- 9%
'89	00%	00%	10%	+55%
'97	00%	00%	05%	+12%
'02	00%	00%	21%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	366	Dec:	0%
'89	332		0%
'97	740		14%
'02	840		21%

Pinus monophylla																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	2	-	-	1	-	-	-	-	-	3	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	0	Dec:	-
'89	0		-
'97	0		-
'02	60		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
Y	83	-	1	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	-	-	-	-	-	1	-	-	-	1	-	-	-	33			1
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	5	-	-	-	-	-	17	8	-	14	-	733	8	19	22
	89	-	-	16	1	2	-	-	-	-	18	-	1	-	633	9	24	19
	97	1	4	33	-	9	9	3	-	-	59	-	-	-	1180	11	59	59
	02	-	2	17	-	4	19	-	-	-	42	-	-	-	840	10	44	42
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	1	7	-	-	-	-	-	-	7	-	1	-	266			8
	97	-	-	3	1	-	-	1	-	-	4	-	-	1	100			5
	02	-	1	8	-	-	5	-	-	-	12	-	-	2	280			14
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	04%	96%	61%	
'89	11%	86%	07%	+18%
'97	20%	69%	02%	+28%
'02	13%	88%	04%	-14%

Total Plants/Acre (excluding Dead & Seedlings)				
'83	766	Dec:		0%
'89	932			29%
'97	1300			8%
'02	1120			25%

Symphoricarpos oreophilus																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	2	-	-	-	-	-	2	-	-	-	40	-	-	2
	02	-	-	-	-	-	-	1	-	-	1	-	-	-	20	12	17	1
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	-	-	1	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	33%	-67%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	0	Dec:		0%
'89	0			0%
'97	60			33%
'02	20			0%